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SANITARY ENGINEERING DIVISION

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NEWS

December, 1957

TO MEMBERS OF THE
SANITARY ENGINEERING DIVISION,
AMERICAN SOCIETY OF CIVIL ENGINEERS

The activities of your Executive Committee at their New York meeting in October will be more fully reported by Secretary Arthur D. Caster.

As incoming Chairman of this Division, I am pleased to work with and for you in advancing our knowledge in sanitary engineering. We are all aware of the tremendous importance attached to the field of sanitary engineering under present community living. New concepts and problems are developing and new solutions must be found.

I would like each of you to re-read the first article in the October Division Activities Section of the Journal which was written by our News Editor, David H. Howells. I believe the program on which he has requested your aid, namely, the reporting of research activities and developments in the various fields of interest, would materially advance and implement our present information on sanitary engineering. The solution of critical problems can be aided by research and knowledge which may not have been completed and published as a technical paper, but the recognition of the problem in other areas and the information from studies in progress may be helpful to other researchers, educators, and practicing engineers. Our Division Activities Section can be more beneficial to all of us by your help on this program.

Richard R. Kennedy
Chairman, Executive Committee
Sanitary Engineering Division

Annual Report
Sanitary Engineering Division
October 1957

The activities of the Sanitary Engineering Division during the past year are indicated by a review of the work of the several administrative and technical committees.

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The Executive Committee met prior to and during the Annual Convention in Pittsburgh, October 1956, and again prior to the Conference on Technical Procedure at Oklahoma City, April 1957. All committeemen were present at these meetings. The Sanitary Engineering Division was represented at the Conference on Technical Procedure by Messrs. Hazen, Kennedy and Caster.

The summary of committee activities that follows has been abstracted from the annual reports submitted by each of the chairmen.

1. COMMITTEE ON PUBLICATIONS

Chairman: Ross E. McKinney

Members: J. E. Kiker, Jr., J. B. Nesbitt, Warren Kaufman, L. A. Young, J. H. Fooks, John Wold, William Dobbins, Werner Grune, Roy Ramseier, W. W. Aultman, J. R. Fleming, L. J. Murphy, W. A. Cawley, William Ingram

Mr. F. J. Smith resigned from the committee because of an overseas assignment with the U. S. Air Force. Mr. McKinney submitted his resignation early in the year, but has stayed on at the request of the Executive Committee, pending selection of a replacement. Prof. I. W. Santry of Southern Methodist University has agreed to head up the committee and will commence work directly.

The Committee on Publications is primarily responsible for the publication of the Journal of the Sanitary Engineering Division. In the past year the Journal was issued on a bi-monthly basis. It included 46 papers and 15 discussions of papers previously published. Of the 46 papers published, 7 were reports from the S.E.D. Research Committee.

In closing his report, Chairman McKinney deplored the small number of papers submitted for publications by members of S.E.D. and the preparation of papers in such form and manner that they cannot be published without extensive rewriting and editing. The chairman suggested further, that unless there is more interest in the Journal, publication be scheduled on a quarterly rather than bimonthly basis.

2. COMMITTEE ON COOPERATION WITH LOCAL SECTIONS

Chairman: Jack H. Fooks

Members: H. C. Clare, F. A. Eidsness, D. K. Harmeson, H. L. Kinsel, K. C. Lauster, L. J. Murphy, J. P. Slater.

The purpose of this committee is to cooperate with local A.S.C.E. sections in the organization of sanitary engineering groups or committees. Such groups have been established in Los Angeles, San Francisco, New York and some other cities.

During the past year sanitary engineering committees were formed at Seattle, Washington, under the chairmanship of Mr. Glen T. Sparrow, and at Spokane, Washington, under Professor Gilbert H. Dunstan. These developments were the results of direct efforts on the part of H. C. Clare, a member of the Committee on Cooperation with Local Sections.

In submitting his report, Mr. Fooks has requested that he be relieved as chairman because of pressure of other work and because of his inability to travel sufficiently to encourage this activity.

3. COMMITTEE ON SESSION PROGRAMS

Chairman: A. J. Fox, Jr. (effective October, 1957)

Members: C. P. Straub, V. W. Bacon, C. R. Walter, T. Niles, C. M. Everts, Jr.

The purpose of this committee is to assist in the development of S.E.D. technical programs for meetings of the Society and to assure proper balance and coverage of the field. The committee was reconstituted by action of the Executive Committee at its Oklahoma City meeting. The new members, although scheduled to start officially in October 1957, have been working at the problem for some months. Under the new arrangements, the committee consists of three "permanent" members, one to be replaced each year, plus two or three "temporary" members. The temporary members are the S.E.D. representatives on local program committees, charged with organizing technical programs for A.S.C.E. conventions. Thus, the temporary members now consist of C. R. Walter, New York meeting, October 1957; T. Niles, Chicago meeting, February 1958; C. M. Everts, Jr., Portland, Ore., meeting, June 1958.

As soon as program chairmen are selected for subsequent meetings, they should replace by rotation this year's local chairmen.

4. COMMITTEE ON RUDOLPH HERING MEDAL

Chairman: Ross E. McKinney

Members: W. W. Aultman, N. L. Nemerow

The purpose of this committee is to recommend the award of the Rudolph Hering Medal to the Board of Direction, A.S.C.E. The medal this year will be awarded to Messrs. Brooks, Ingersoll, and McKee of the California Institute of Technology, Pasadena, Cal.

5. COMMITTEE ON ATMOSPHERIC POLLUTION

Chairman: William T. Ingram

Members: R. E. Hatchard, A. F. Bush, A. F. Meyer, Jr., A. T. Rossano, Jr., J. W. Thomas

Members of Task Forces: Frank Tetzlaff, S. F. Dommes, Jr., R. C. Pickard, Charles Senn, Eugene Zwenig, Gerald Palevsky, H. E. Siefert, G. D. Clayton, F. R. Bowerman, E. R. Hendrickson, E. T. Chanlett, Frank Butrico, W. S. Foster, W. E. Dobbins, J. G. Terrill, Jr., R. A. Gilmore

The purpose of this committee is to formulate a program of constructive activity and professional leadership in this field; to establish an outline and prepare for sanitary engineer's guides for the engineering practice of air pollution control; to stimulate orderly presentation of technical material for publication; and to develop one or more manuals of practice on the subject as the need arises.

A number of task forces have been organized to deal with particular phases of atmospheric pollution and its control:

I. The Status of Air Pollution Activities Involving Sanitary Engineering
II. Air Pollution Control Engineering

III. Education and Training for Sanitary Engineers
IV. Research Activities on Atmospheric Pollution and Its Control
V. Radioactive Pollutants

Chairman Ingram has advised that a meeting of the committee and a review of task force reports, originally scheduled for October 11-12, 1957, has been called off because the A.S.C.E. Committee on Division Activities turned down a request for reimbursement of travel expenses of non-A.S.C.E. members of the committee.

This committee has been handicapped by the fact that relatively little activity in the air pollution field is carried out by civil engineers. In order to cover the field properly, the chairman has felt it necessary to put on his committee and task forces a number of men not members of A.S.C.E. Under rules of the Society, this complicates committee activity considerably, and may make effective work almost impossible. The future scope and operations of the Committee on Atmospheric Pollution require the careful consideration of S.E.D. and A.S.C.E.

6. COMMITTEE ON INDUSTRIAL WASTE PRACTICE

Chairman: John E. Kinney

Members: J. J. Baffa, E. B. Besselievre, B. Dickerson, W. W. Eckenfelder, W. S. Wise, J. Bethel, E. Kelly, D. Bloodgood

The purpose of this committee is to study the varying requirements of industrial waste treatment; to indicate the functions in which sanitary engineers are qualified to practice; to prepare and stimulate such articles and manuals of practice as are pertinent to the attainment of these objectives.

A questionnaire has been addressed to the committee, asking the place and needs of the sanitary engineer in seven areas of activity. The replies from the committee have been slow, and the opinions divergent. A summary report is planned for committee review this fall. It is hoped in this report to point up areas in which papers and discussions should be invited.

7. COMMITTEE ON PREPARATION OF A MANUAL OF PRACTICE ON INCINERATION OF MUNICIPAL REFUSE

Chairman: M. H. Klegerman

Members: F. R. Bowerman, S. M. Clarke, R. H. Ritter, C. A. Rogus

Members of Task Force: R. C. Corey, N. B. Hume, Rolf Eliassen, Joseph Rofman, R. C. Taylor, W. A. Schneider, W. A. Xanton, Abraham Michaels, R. C. Regnier, M. F. Brickner, Maurice Feldman, A. K. Lane, J. V. Lewis

The purpose of this committee is to prepare a manual of practice on the design, construction and operation of municipal refuse incinerators.

The press of other work has prevented major accomplishments in the past year. The committee has scheduled completion of the first draft for January, 1958, and a meeting for the review of the first draft in February 1958. The chairman has requested authorization of the February meeting to be held probably in New York. Completion date of the manual cannot be estimated at this time.

8. COMMITTEE ON PREPARATION OF A MANUAL OF PRACTICE ON SANITARY AND STORM SEWER DESIGN AND CONSTRUCTION

Chairman: B. H. Swab

Members: R. R. Kennedy, Co-Chairman, J. C. Lawler, R. E. Lawrence, R. R. Ribal, C. G. Gaither, L. L. Spahr, H. S. Smith, C. R. Velzy, S. I. Zack

Members of Task Force: A. Aarons, John Baffa, C. W. Burup, B. S. Bell, H. H. Benjes, F. R. Bowerman, J. W. Bowman, Paul Bock S. Borland, C. S. Brown, J. M. Colyer, J. W. Finney, Jr., H. H. Heath, E. M. Hirsch, S. W. Jens, R. P. Johnson, L. H. Kessler, L. D. Knapp, J. K. Latham, A. J. Maahs, G. E. Mau, W. A. O'Leary, E. A. Pearson, C. M. Pepperman, R. Pomeroy, S. D. Porter, G. Posthumas, H. C. Scott, M. G. Spangler, I. M. Sprague, W. E. Stanley, M. W. Tatlock, A. L. Tholin, A. Van Praag, Jr., G. R. Watkins, C. H. Walker

The purpose of this committee is to prepare a manual of practice on the design and construction of sanitary and storm sewers. The manual is being prepared jointly with the Federation of Sewage and Industrial Wastes Assns.

The activities of this committee during the past year have consisted of editing the manual for final publication. An editing committee, consisting of H. H. Bemjes, S. W. Jens, R. R. Kennedy, J. C. Lawler, H. S. Smith, A. L. Tholin, B. H. Swab, Chairman, met in St. Louis in January 1957 for review of the manual contents. A semi-final draft was published in May 1958 and distributed for review and suggestions to 94 individuals, including the committee members. The suggestions received from the reviewers were considered at the final editing committee meeting in Chicago in June 1957. The committee was disappointed in the small number of suggestions received from reviewers of the semi-final draft.

The final draft of the manual is being edited and typed for reproduction. This issue should be distributed in October 1957 to the committee members and submitted to the joint societies for approval and publication. As previously outlined, the manual contains 12 chapters, starting with the organization and administration of sewer projects and covers all phases of design and construction of sewers and pumping stations.

9. COMMITTEE ON THE PREPARATION OF A MANUAL OF PRACTICE ON SANITARY LANDFILL

Chairman: Desso T. Mitchell

Members: Leo Weaver, Jean L. Vincenz, P. H. McGauhey, Joseph Banta

The purpose of this committee is to prepare a manual of practice on the design, operation and cost of sanitary landfill. Chairman Mitchell reports that the manual has been completed and assembled, and partially edited. Editing should be completed this fall. The chairman suggests that someone should be named by the Executive Committee to read the manual with the purpose in mind of re-editing if necessary.

10. COMMITTEE ON PREPARATION OF A MANUAL OF PRACTICE ON SEWAGE TREATMENT PLANT DESIGN

Chairman: Daniel A. Okun

Members: A.S.C.E.—C. F. Niles, Jr., N. B. Hume, E. S. Ordway, L. W. Van Kleeck; F.S.I.W.A.—G. E. Hubbell, T. R. Hazeltine, M. N. Klegerman, George Martin, F. D. Wraight

Task Force Members: G. K. Erganian, G. Walton, G. H. Teletzke, G. F. Bernauer, E. E. Ross, H. B. Gotaas, K. Fraschina, G. H. Abplanalp, S. Koplowitz, J. G. Albertson, H. K. Gatley, E. R. Howard, R. W. Horne, F. L. Flood, W. D. Barlow, H. Wolf, W. T. Ingram, F. Burley, D. E. Drier, M. Spiegel, R. Hoot, S. Reaves, G. A. Fleet, A. F. Chamblin, B. J. Hartman, J. Townsend, E. Farmer, K. L. Mick, G. F. Rettig, R. S. Rankin

The purpose of this committee is the preparation of a manual of practice on sewage treatment plant design. The manual is being prepared jointly by S.E.D. and the Federation of Sewage and Industrial Wastes Assns.

The committee held a meeting in Pittsburgh from May 2-4, inclusive. Since then, final drafts of individual chapters, in some cases representing four successive revisions, were submitted to the chairman of the committee in July 1957. An editorial committee consisting of Messrs. Rankin, Ingram, Klegerman and Okun met in New York on August 13 through 15 for the purpose of assembling the chapters of the manual and reviewing changes in the last chapter drafts. As a result of this meeting, a draft of the entire manual is now in preparation. It is hoped that the draft can be distributed at the time of the A.S.C.E. annual meeting.

It is planned to distribute the mimeographed drafts to 20 or 30 qualified persons for review of individual chapters and for review of the manual as a whole. It is hoped that comments and corrections will be available by February 1958. The revised manual will then be turned over to the technical editor, and it is hoped that the manual in manuscript form can be submitted to the A.S.C.E. and the Federation for consideration for publication in May 1958.

The manual contents will be substantially as outlined previously.

11. COMMITTEE ON PUBLIC HEALTH

Chairman: Dwight F. Metzler

Members: B. B. Berger, E. C. Jensen, C. L. Senn and W. W. Towne

Members of Task Force: W. T. Ballard, J. B. Coulter, E. L. Ruppert, I. F. Shull and G. W. Reid, Chairman

The purpose of this committee is to continue the study of engineering activities in the field of public health which should be undertaken by the Division; recommendations to be made to the Executive Committee as the need for programs arises; and to organize and direct the activities of a task group which will develop a brochure or a manual of practice covering the methods of planning, design, financing, construction, maintenance and operation of water and sewer systems for suburban areas.

During the past year most activity has centered around "suburban or fringe area" study. Preliminary data were assembled by the committee prior to October 1956. The task force met for a 3-day session prior to the A.S.C.E. winter meeting in Jackson, Miss. Messrs. Shull and Reid of the task force, Metzler, Towne, Berger and Senn of the committee, as well as Coulter, Butrico and Richards of the Public Health Service, a representative of the National Association of Home Builders and Lawrence of the S.E.D. Executive Committee were present. The report of the 3-day meeting was assembled

and distributed August 13th to committee members, the task force, and selected specialists, such as the Institute of Community Development and National Association of Home Builders for review.

Next year will be devoted to completion and publication of the report, "A Study of Sewage Collection and Disposal Systems in Fringe Areas". Review of the August 13th draft has been completed by the committee, and comments will be solicited from the City Planning Commission, and others as mentioned above. This will be followed by a technical review and a final writing of the report. It is hoped to publish the report by April 1, 1958.

The investigations and comments received from correspondents have opened new facets which could be investigated by the committee, but such work is believed to be beyond its scope. The U. S. Public Health Service has expressed some interest in continuing these studies, and Chairman Metzler recommends that all of the material collected during the study be made available to the Public Health Service. If the Public Health Service needs an advisory group, both the task force and the committee are made up of persons experienced in fringe sanitation problems.

12. COMMITTEE ON REVISION OF MANUAL NO 19—DESIGN OF WATER TREATMENT PLANTS

Chairman: Ray L. Derby

Members: A.S.C.E.—J. J. Baffa, C. A. Black, R. C. Merz, G. R. Scott, H. L. Thompson; A.W.W.A.—W. W. Aultman, H. O. Hartung, R. Hazen, H. E. Lordley, R. L. McNamee

The purpose of this committee is to revise A.S.C.E. Manual 19 "Design of Water Treatment Plants". The work is being done by a joint committee of S.E.D. and A.W.W.A.

Progress has been slow. First drafts of two additional chapters were completed during the year, but six chapters have yet to be written. Chairman Derby reports that he has recovered from his illness and will be able to push things better in the coming year. (The chairman of S.E.D. Executive Committee is one of the most delinquent members of the Manual 19 committee. He too hopes that the coming year will be better.)

13. COMMITTEE ON SANITARY ENGINEERING RESEARCH

Chairman: Nelson L. Nemerow

Members: F. G. Paloscay, C. H. Hull, W. T. Ingram, M. A. Churchill, Harry Faber, Ralph Stone

The purpose of this committee is to provide leadership in pointing out research needs, in generating interest and financial support for sanitary engineering research, and in discussing the relationship and utilization of specific research findings to sanitary engineering practice; and to report on the latest research developments through the use of "Proceedings" papers outlet to the division and emphasizing the interpretation and significance of research developments.

During the past year the committee has published 12 reports covering research projects in the field of sanitary engineering, as follows:

#1	"Biological Treatment of Highly Alkaline Textile Mill Waste—Sewage Mixture"

# 2	"Physical and Chemical Control of Insects"
# 3	"The Effect of Nutrients Upon the Rate of Stabilization of Spent Sulphite Liquor in Receiving Waters"
# 4	"Experience With a New Type of Dairy Waste Treatment"
# 5	"Pilot Plant Composting of Municipal Garbage at San Diego, Cal."
# 6	"Variations of Point Rainfall with Distance"
# 7	"Investigation of Planned Refuse Collection and Disposal"
# 8	"Treatment of Alkaline Sulfur Dye Waste With Flue Gas"
# 9	"Evaluation of Water Resources of a River Basin"
#10	"Air Pollution Studies at University of California at Los Angeles"
#11	"Status of Refuse Collection and Disposal"
#12	"Biological Oxidation of Alkaline Wastes"

The committee is sponsoring three papers to be presented at the October 1957 A.S.C.E. annual meeting.

14. COMMITTEE ON SEWERAGE AND SEWAGE TREATMENT

Chairman: Kerwin L. Mick

Members: B. Benas, F. R. Bowerman, G. P. Edwards, W. F. Garber, P. D. Haney

The purpose of this committee is to submit sectionalized reports as follows: Section I—Sewerage; Section II—Primary Treatment; Section III—Secondary Treatment; Section IV—Sludge Disposal; Section V—Financing and Legal Aspects; Section VI—Specialized Subjects. The reports should emphasize sanitary engineering applications, design bases, costs, increased technical proficiency, and sound engineering practice. To avoid duplication of work, efforts should be made to develop cooperation with other organizations serving this field.

Since reorganization in 1955 the committee has published one report on Section I—Sewerage, by Bowerman's sub-committee. (Journal, June 1956) The first draft of Section III—Secondary Treatment, by Edwards' sub-committee has been received and is in the process of revision. This report should be ready for submission in a few weeks.

Three other section reports are past due. The section assignments and original target dates for submission of the other reports are tabulated below:

	Section	Chairman	Target Date
II	Primary Treatment	Benas	June 1958
IV	Sludge Disposal	Pearce (died 7/56)	June 1956
V	Financing and Legal Aspects	Haney	December 1956
VI	Specialized Subjects	Garber	December 1955

The chairman recommends that Mr. LeRoy Van Kleeck be requested to take the place of Langdon Pearce, deceased, as sub-committee chairman for Section IV.

15. COMMITTEE ON THE SANITARY ENGINEERING ASPECTS OF NUCLEAR ENERGY

Chairman: Conrad P. Straub

Members: E. F. Gloyna, A. E. Gorman, W. J. Kaufman, A. Rihm, Jr., J. G. Terrill, Jr.

The purpose of this committee is to advance the body of knowledge involving sanitary engineering and radiological health; to stimulate interest and activity in this field by sanitary engineers; to increase the sanitary engineers' know-how in this field; to recommend committees for special task investigations and reports; and to recommend publication of manuals and papers on subjects in this field.

The chairman and other members of the committee participated in activities of the American Standards Assn. and the Nuclear Standards Board during the year. In connection with the planning of the Third Nuclear Engineering Congress to be held in Chicago in March 1958, the chairman and other members of the committee submitted suggestions relative to topics to be included in the A.S.C.E. sponsored portion of the meetings and have agreed to participate in the meeting through the presentation of papers of interest to the Sanitary Engineering Division. In this connection, the chairman was in communication with the Nuclear Section, Power Division, A.S.C.E., and suggested topics for joint sponsorship.

Chairman Straub met with various members to discuss plans for a committee meeting at the time of the annual meeting in New York. Such a meeting will be held to outline plans for the Committee Report on Site Selection for Nuclear Installations.

16. COMMITTEE ON WATER SUPPLY ENGINEERING

Chairman: Robert D. Mitchell

Members: J. A. Borchardt, H. J. Carlock, M. P. Crabill, G. E. Ferguson, R. R. Harris, M. P. Hatcher, K, R. Kennison, J. S. Longwell, T. M. Niles, R. C. Palange, E. A. Pearson, E. W. Whitlock

The purpose of this committee is to submit sectionalized reports as follows: Section I—Water Resources; Section II—Water Analyses and Testing; Section III—Design of Supply Works; Section IV—Design of Treatment Works; Section V—Distribution Systems; Section VI—Financing and Legal Aspects; Section VII—Specialized Subjects.

During the current year the sub-committee chairmen reported as follows:

Section I—Water Resources - has completed a draft copy of a Section I report which is now in the hands of the chairman of the Executive Committee, S.E.D., for review.

Section III—Design of Supply Works - has prepared a paper on "Design of Supply Works" to be presented at the fall meeting as a contribution to the committee but under the authorship of Mr. Carlock.

Section VII—Specialized Subjects - has a report in partial form but has not submitted material for review.

Other sections have not reported progress.

In closing this report, Chairman Mitchell recommends that the Executive Committee review again the purposes and value of the committee, as well as

the effectiveness under its present organization. The chairman feels that the reorganization of the committee several years ago has not resulted in the publication of worthwhile contributions to water supply literature, as had been hoped. He notes that a number of sub-committee members have seriously questioned the value of the reports. The reports are essentially a review of literature covering the field which are of doubtful value. The chairman concludes his report: "The present chairman does not have the time or inclination to send out the continuous stream of cajoling letters that are apparently required to cause committee members to put aside more pressing tasks to write reports which they believe to be of doubtful value".

17. JOINT COMMITTEE FOR THE ADVANCEMENT OF SANITARY ENGINEERING

Chairman: Earnest Boyce

Members: A.S.C.E.—Thomas Camp, William Hardenbergh; A.W.W.A.—Wendell La Due, R. Stiemke, R. Faust; A.P.H.A.—Mark Hollis, George Pierce, C. Sterling; A.S.E. Ed.—Gilbert Dunstan, J. Kiker, J. C. Dietz; F.S.I.W.A.—R. E. Lawrence, R. S. Rankin, D. Metzler

The purpose of the joint committee is to advance the training and professional status of sanitary engineers. For several years the principal occupation of the joint committee has been the establishment of the American Sanitary Engineering Intersociety Board for the certification of sanitary engineers. The Intersociety Board is a separate entity, and the membership of the joint committee and Intersociety Board are no longer identical.

The American Institute of Chemical Engineers accepted the invitation of the American Sanitary Engineering Intersociety Board to be represented on the Board by three members. It has been assumed that these three persons would be added also to the Joint Committee for the Advancement of Sanitary Engineering. Chairman Boyce suggests that the Executive Committee S.E.D. authorize the increase in the size of the joint committee.

During the past year the sub-committee on personnel and training of the Committee on Sanitary Engineering and Environment, National Research Council, was authorized to hold a conference on the education, training and utilization of sanitary engineers. This meeting was financed through N.R.C. by funds made available by the U. S. Public Health Service. Although this was not a direct activity of the joint committee, the conference was organized largely through the efforts of those who compose the joint committee. A lengthy report of the conference has been reviewed and edited. It is hoped that copies may be available to the S.E.D. Executive Committee in the near future.

Chairman Boyce closes his report with the hope that sometime in the future A.S.C.E. may see fit to release the restrictions imposed by the Board of Direction when it approved the organization of the American Sanitary Engineering Intersociety Board, as regards activities beyond certification and requests that pending that time membership of the joint committee and Intersociety Board be kept the same.

18. NEWSLETTER

A newsletter reporting activities of the Division and other events of interest to sanitary engineers has appeared in each issue of the Journal. Paul W.

Reed served throughout the year as editor; his place has been taken by David H. Howells.

Assistant Editors through the year were: J. W. Clark, G. H. Dunstan, E. R. Hendrickson, D. H. Howells, H. J. Karsten, D. G. Larkin, W. A. Lyon, Carl Zillig, G. A. Palevsky, J. S. Bethel, Jr.

19. TECHNICAL SESSIONS

Technical sessions were held at A.S.C.E. meetings as follows:

Pittsburgh, October 1956—R. F. Brandt, local Program Chairman, 5 sessions, covering sewage sludge disposal, purification capacity of streams and acid mine drainage, sanitary engineering practice, air pollution, nuclear energy and a joint session with the U.S.A. Section of the Inter-American Society of Sanitary Engineers, dealing with activities in South America.
Jackson, Miss., February 1957—R. H. Young, local Program Chairman, 3 sessions covering sanitary engineering practice, education and administration, waste disposal, and water resources.
Buffalo, N. Y., June 1957—N. L. Nussbaumer, local Program Chairman, 3 sessions covering water quality of Detroit and Niagara Rivers, intake designs, industrial waste and sewage disposal.

Mr. Lewis A. Young, Water Supply and Water Pollution Control Program, U. S. Public Health Service, Atlanta, Georgia, was appointed to the Executive Committee of S.E.D. by the A.S.C.E. Board of Direction to take the place of Roy Morton. Mr. Young's term of office runs to October, 1961.

Richard Hazen, Chairman	(Oct. 1958)
R. R. Kennedy, Vice Ch.	(Oct. 1959)
R. E. Lawrence	(Oct. 1960)
Roy Morton	(Oct. 1957)
A. D. Caster, Secretary	

DID YOU KNOW THAT

On October 16, during the Annual Convention in New York City, the Executive Committee of the Sanitary Engineering Division passed a resolution citing Earnest Boyce for exceptional service as Chairman of the Joint Committee for the Advancement of Sanitary Engineering. The resolution is as follows:

"Whereas, Earnest Boyce has for the past six years, rendered faithful and exceptional service as Chairman of the Joint Committee for the Advancement of Sanitary Engineering, and

Whereas, through his untiring efforts as Chairman, the program of the Joint Committee for the Certification of Sanitary Engineers has been successfully established through the formation of the American Sanitary Engineering Intersociety Board, and

Whereas, Earnest Boyce has served as the first chairman of the American Sanitary Engineering Intersociety Board during the formative period of this Board and the certification of the initial roster of sanitary engineers,

Therefore, the Executive Committee, Sanitary Engineering Division, A.S.C.E., hereby records its appreciation of this outstanding contribution."

B. A. Poole, Director of Environmental Sanitation, Indiana State Board of Health, and Secretary of the Indiana Stream Pollution Control Board, served as an advisor to the U. S. delegation at the 10th Session of the World Health Organization Assembly at Geneva, Switzerland from May 7 through May 27. Mr. Poole was one of 16 Americans chosen to represent the United States at the world organization assembly and was the only engineer from this country selected to attend. The United States delegation was headed by Surgeon General L. E. Burney. More recently, Mr. Poole was elected Chairman of the Ohio River Valley Water Sanitation Commission in July 1957. He has been a member of the Commission since its formation in 1948.

Roger James, district engineer for the Washington State Department of Health, headquarters at Spokane, has been transferred to Seattle to become head of the Environmental Sanitation Section of the Division of Engineering and Sanitation. He replaces Edward L. Ruppert, who has taken a position with the Public Health Service.

The University of California recently announced the appointment of P. H. McGauhey as Professor of Sanitary Engineering effective January 1, 1957. Professor McGauhey will assume responsibility for the direction of the education program in Sanitary Engineering and will continue to serve as Director of the Sanitary Engineering Research Laboratory.

Rolf T. Skrinde, a graduate student at the Massachusetts Institute of Technology, has accepted the position of Assistant Professor of Civil Engineering and Assistant Sanitary Engineer, Division of Industrial Research, at the State College of Washington starting next summer. He replaces J. V. Lunsford, who is now Associate Professor of Civil Engineering at the Rensselaer Polytechnic Institute, Troy, New York.

Henry C. Briggs, a sanitary engineer of the Indiana State Board of Health, and as a representative of the Health Services Division of the Indiana Department of Civil Defense, participated in on-site monitoring activities during the 1957 weapons test series in Nevada during the month of August. His activities were under the direction of the Federal Civil Defense Administration and he was stationed at Camp Mercury, Nevada.

Professor Warren J. Kaufman, University of California, will be on sabbatical leave during the academic year 1957-58. He will join the staff of the Commissariat a 'Energie Atomique, the French equivalent of the Atomic Energy Commission, at Saclay, France for a period of about eight months. During the balance of his leave, Professor Kaufman expects to visit various hydraulic and sanitary engineering laboratories in Europe.

Joseph D. DeCosta's duties with the East Bay Municipal Utility District in Oakland, California, have been expanded and he is now manager of the newly-formed Water Production and Distribution Division. This division has responsibility for operation of all water supply, treatment, and distribution facilities of the District.

Charles F. Niles, former engineer and superintendent of the Muncie, Indiana, sewage treatment plant is now associated with Henry B. Steeg and Associates, Consulting Engineers, Indianapolis.

The Indiana Section of the American Water Works Association is planning their 50th Anniversary Meeting and celebration to be held in Indianapolis

February 5-7, 1958. Old timers in the water works field will be honored at a luncheon and one of the features of the program will be a session devoted to the history of the Indiana Section, early engineering projects and early water works patents and inventions.

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RESEARCH is a high-hat word that scares a lot of people. It needn't. It is rather simple. Essentially, it is nothing but a state of mind - a friendly, welcoming attitude toward change. Going out to look for a change instead of waiting for it to come. Research, for practical men, is an effort to do things better and not to be caught asleep at the switch. The research state of mind can apply to anything; personal affairs or any kind of business, big or little. It is the problem-solving mind as contrasted with the let-well-enough-alone mind. It is the composer mind instead of the fiddler mind. It is the tomorrow mind instead of the yesterday mind.

Charles F. Kettering

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SANITARY ENGINEERING RESEARCH

UNIVERSITY OF FLORIDA

The research program in sanitary engineering at the University of Florida has been set up along broad lines and includes the following:

1. Routine operation and testing of standard sewage treatment processes on a pilot plant scale to determine design criteria and operating procedures best suited to Florida's semitropical climate.
2. Detailed, full-scale studies at the Campus Sewage Treatment Plant of those operating procedures which appear practicable in the pilot plant studies.
3. Studies of problems associated with stream sanitation, air pollution, and water supply which affect the health and well-being of Florida's citizens.
4. Studies of methods for treating industrial wastes from Florida's rapidly expanding industries.
5. Teaching and student research leading to the degrees of Master of Civil Engineering and Doctor of Philosophy in the field of sanitary engineering.

Extensive facilities are available to carry out the research program outlined above. The Sanitary Engineering Research Laboratory and its associated pilot plant include over forty mutually independent sewage treatment units on a pilot plant scale. The analytical laboratory is equipped to provide complete chemical and biological examinations. Available equipment includes a spectrophotometer, electro-titrimeter, gas analysis apparatus, and a Warburg apparatus. In addition, a radiological laboratory completely equipped with automatic counting equipment and single channel differential pulse height analyzer with a gamma-sensitive scintillation detector is available. Construction has begun of an addition to the research laboratory which will more than double the available floor space. When construction is completed the bacteriological and radiological laboratories will be expanded and the air pollution laboratory moved to this building.

The Campus Sewage Treatment Plant adjoins the research laboratory and was designed to treat 700,000 gallons of sewage per day by standard and high-rate filtration. Plans are now being prepared to increase the capacity to 1,500,000 gallons per day the addition of an activated sludge unit. When this unit is completed, all of the standard methods of municipal sewage treatment will be available for research in full-scale units. The plant is so designed that more complete physical and analytical control can be obtained than is possible at municipal sewage treatment plants.

A well-equipped laboratory is also located in the Engineering and Industries Building. This unit, primarily intended as a teaching laboratory, now houses the air pollution laboratory and is equipped to perform physical, chemical, and microbiological analyses associated with air pollution and with water, sewage, and industrial waste treatment.

Since the inception of the research laboratory in 1947, approximately forty research projects have been initiated. Many of these have been brought to a logical conclusion, and reports covering the findings are available in many technical journals and publications.

At present, eight major research projects are active. Five of these are sponsored by Federal or private agencies and three by the State Government. A brief resume of some of the work in progress follows.

Anti-Pollution and Sewage Disposal for Florida Communities.—This study has as its purpose the investigation of methods of sewage treatment which show promise of providing more economical methods of waste disposal for Florida communities and other semitropical areas. At present three investigations are in progress—Intermittent Sand Filtration, Lagooning of Sewage, and Solar Heat for Sewage Sludge Digestion. The intermittent sand filter, almost abandoned as a method of municipal sewage treatment, is particularly applicable as a means of providing adequate sewage treatment for small isolated installations common in the area, such as trailer parks, consolidated schools, and housing development. Studies of the efficiency of sand filters under various loadings and dosing cycles have been completed, and the present investigation concerns the effect of sand size on the removal of B.O.D. and suspended solids.

The lagooning of sewage in northern climates has proven an economical method of treatment for small communities where suitable land is available. A preliminary study initiated in 1956 indicated that loading parameters may be considerably higher in Florida than those used in colder climates, that many of the anticipated difficulties did not materialize, and that the degree of treatment was as good or better than expected. Pilot plant studies are now underway to establish applicable design parameters to be used on full-scale investigations.

Heat is a major factor in establishing the rate of metabolism in anaerobic digestion, and Florida's sunshine—abundant practically the year around—is an economical source of solar energy. Investigations are now in progress to determine an effective method of utilizing this unlimited source of heat for sludge digesters, as preliminary studies have indicated such a project worthy of further work.

Basic Processes of Secondary Treatment.—Under this project the basic processes of secondary sewage treatment are being studied using radioactive isotopes as tracer elements. This is an investigation of the phenomena involved in the stabilization of the major organic and inorganic substances by

the zooleal slimes associated with the filtration process, using the radioactive elements as tracers. In this investigation attempts will be made to follow the degradation process, step by step, from the initial complex substance to its final oxidized form.

Taxonomy and Ecology of Iron and Sulfur Bacteria.—The iron and sulfur bacteria, responsible for the formation of boghead iron and sulfur deposits in nature, also cause much of the tuberculation and pitting of water pipes, the slime formation in and malfunctioning of certain water treatment processes, and slime growth associated with stream sanitation. An attempt is being made to determine the precise taxonomic position of these organisms as well as their ecology and nutritional requirements. Pure cultures of the iron and sulfur bacteria are being prepared, and the products of their metabolism and their reaction to nutritional variations carefully investigated.

Pulp and Paper Industry Air Pollution Problems.—A preliminary study of air pollution problems associated with the pulp and paper industry is being conducted. The air pollution problem caused by this industry—which is becoming one of Florida's most important—is well known. The purpose of this investigation is to develop methods for sampling and analyzing stack gases, to determine the precision and efficiency of the analytical techniques developed, and the preparation of a manual on practice of meteorology as it affects air pollution. It is anticipated that the first installment of the manual will be completed in 1958.

Dispersion and Effect of Airborne Industrial Wastes.—The purposes of this study are to investigate the dispersion of airborne wastes of the phosphate processing industry, to determine the quantitative concentration of the pollutants, and to correlate this information with the effects on the environment. Over seventy per cent of the world's supply of rock phosphate is mined within a 25-mile radius of Bartow, Florida, and a considerable amount is processed in the same general area. Previous investigations have indicated that the airborne wastes from the processing industry have a profound effect upon the environment and are believed to be detrimental to the yield of food crops in a large surrounding area. While much is known about the disposition and dilution of various wastes, their concentration in waterways, and the effect on stream biota, little is known about the effects of gaseous wastes discharged into the atmosphere. The purpose of this project is to secure some basic information about the dispersion and effect on the environment of the airborne wastes from this particular industry.

Studies of the microscopic biota of Florida waters, both polluted and unpolluted, are being continued. An extensive study of the use of native Florida materials as trickling filter media was terminated in July, 1957, and a report of this investigation is being prepared. Investigations of new methods for nitrogen determination have also been undertaken at the request of the Standard Methods Committee of the Federation of Sewage and Industrial Wastes Associations.

UNIVERSITY OF CALIFORNIA

Among those engineering research projects currently underway at the Sanitary Engineering Research Laboratory the following are of particular interest to S.E.D. members:

Turbulent Mixing of Wastes in Receiving Waters.—Experimental work has been initiated to develop a better understanding of the fundamental laws of fluid mechanics as they apply to turbulence structures resulting from the disposal of liquid wastes through submarine outfalls. The mass transport of traced water originating at a joint source on the surface of a flowing stream is being studied as a function of time and distance of flow, scale of turbulence, roughness characteristics of the channel bottom and Reynolds number.

Sedimentation Basin Design.—The degree of hydraulic similitude existing between a prototype and model sedimentation basin is being investigated. A primary sedimentation basin having a capacity of 30 gallons per minute is being used as the prototype while a basin of 3/10 the prototype scale has been constructed as the model. The hydraulic characteristics of the basins will be determined by means of suitable tracers, including radioactive iodine.

Harvesting of Single-Celled Algae.—A preliminary run has been made with a new centrifuge especially designed to harvest material such as single-celled algae. Results of the test indicated that the machine not only can remove algae effectively, but also that the power cost is much lower than that involved in the use of previously designed machines. Algae were completely removed at a through-out rate of 300 gpm. Pumping equipment is now being altered to increase the present capacity so that loading rates as high as 500 gpm may be tried.

Radioactive Waste Disposal.—Continuing studies are being conducted on the underground disposal of radioactive wastes. On the basis of three years of laboratory studies, a field test has been started in which a simulated waste is being injected into a confined aquifer. The rates of movement of cesium and strontium are being monitored by sampling test wells at distances from 13 to 500 feet from the injection well. The previous laboratory work included an investigation with columns of material taken from the same aquifer and with a similar waste.

OHIO RIVER VALLEY WATER SANITATION COMMISSION

Taste and Odor Identification.—The purpose of this investigation is to detect and identify the taste and odor producing substances in the public water supplies taken from the Ohio River. The carbon filter technique is being tried initially to isolate constituents. The material filtered out is extracted from the carbon. The extracts are broken down into aromatic, aliphatic and oxygenated - compound groups, looking toward eventual identification of specific compounds. An effort will be made to correlate findings with consumer complaints. To date finished, settled and raw water have been run through the filters. Samples of the finished and settled water have shown 0.3 to 0.8 ppm organic content. Gas chromotography will be used to further identify the constituents.

Robot Monitoring of Water Quality.—This project involves the determination of what automatic water quality monitoring equipment is presently available, the possibilities of developing new equipment, and the economics of automatic monitoring.

Many companies have been contacted, but few have shown any interest. Only a limited amount of such equipment is available at the present time. Since dissolved oxygen equipment is being developed at the Public Health

Service Robert A. Taft Sanitary Engineering Center, and also by one manufacturer, it has not been included in the ORSANCO monitor development activities. One new piece of equipment has been under test - a chloride meter - for the past six weeks. It has provided very good results. Two companies believe that they can provide equipment to record phenol in parts per billion continuously, including the distillation steps of analyses. The chloride meter, it is believed, can be adapted to hardness and other inorganics. The phenol equipment is also expected to provide possibilities for monitoring other organics. To date the developmental work carried out by the cooperating companies has been done gratis. However, the project is now reaching the stage where ORSANCO will probably have to provide some financing for further development.

PUBLIC HEALTH SERVICE RESEARCH CONTRACTS FOR RESEARCH IN AIR POLLUTION

Institution	Type of Research
Washington State College	Development of a continuous monitoring device for measurement of specific air pollutants; the device is to be adaptable to the measurement of several specific pollutants by changing the reacting solutions which are used.
Franklin Institute	Study of the collection of gaseous pollutants by compression methods and the pilot investigation of the use of long-path infrared spectrometry for continuous analysis of the ambient atmosphere.
Scripps Institute of Oceanography	Development of means of differentiation of the sources of particulate pollution as between fossil fuels and contemporaneous combustible material, using radiocarbon dating techniques.
Arthur D. Little Co.	Development of a filter fabric for removal of particulates from high temperature gas streams.
Pittsburgh Coke and Chemical Company	Study of the use of activated carbon in sampling for gaseous contaminants.
California State Dept. Public Health	Use of meteorology in large-scale air pollution problems.
Colorado State Dept. Public Health	Determination of air-borne radioactivity levels in selected cities having uranium processing mills and attempting to relate these with mill discharge.
El Paso, Texas, City-County Health Unit	Accumulation of basic air pollution data on the type, extent, and effects of

	each industry in the area and application of this knowledge in the context of the weather conditions peculiar to El Paso and Southwest United States.
Illinois Dept. Public Health and Indiana State Board Health	Joint project to plan an intensive study covering Chicago, Cook County, and Lake County area, including the development of administrative and fiscal plans for a bi-State study.

Reason commands us far more imperiously than a master, for in disobeying the one we are unfortunate, and in disobeying the other we are fools.

Blaise Pascal

* * *

WATER SUPPLY AND WATER POLLUTION CONTROL

International Symposium on Saline Water Conversion.—An international symposium on saline water conversion was held in Washington, D. C., on November 4-6, 1957. The various sessions covered such topics as power distillation, electrodialysis, osmosis, solar distillation, freezing, and other scientific approaches to the problems of conversion of saline water for agricultural, municipal, and industrial uses. Approximately thirty invitational technical papers were presented by participating scientists and engineers from the United States, United Kingdom, Europe, Africa, and other areas of the world concerned with these problems.

The scientific papers presented during the three-day conference will be published by the National Academy of Sciences-National Research Council in its numbered series of scientific and technical monographs.

New Hampshire Enacts Boat Pollution Control Law.—New Hampshire became the first State to take positive action to meet the boat pollution control problem on recreational waters when its 1957 Legislature enacted into law House Bill No. 78 to protect the waters of the State from pollution by pleasure boats equipped with marine toilets.

This law provides that after December 31, 1958, no marine toilet on any boat operating upon waters of the State shall be so constructed and operated as to discharge any inadequately treated sewage into its waters directly or indirectly; and that every marine toilet shall be equipped with a suitable treatment device, which has been approved by the New Hampshire Water Pollution Commission, and shall be in operating condition. Whoever violates any provision of the law shall be fined not more than $500 or imprisoned for not more than one year, or both; and such fine shall constitute a lien against the boat on which the offense was committed.

Recreational Use of Water.—In its annual report to the International Association of Game, Fish and Conservation Commissioners at the association's 47th annual convention held in Las Vegas, Nevada, on September 11-12, the National Water Policy Committee centered its emphasis on the deficiencies of the doctrine of prior appropriation as it applies to the recreational use of water.

While the Committee conceded that the best that can be hoped for in some parts of the West is the salvaging of yet unappropriated waters for recreational use, it reported that action taken now and in the immediate future can prevent the loss to recreation of vital waters in the East and South. One essential action recommended by the Committee is the writing into the law of the following safeguards:

1. Allocations of water for consumptive uses may only be made on the basis of accurate and up-to-date inventories of water quantities and flows.
2. Where recreational factors exist or may be foreseen, allocations of water may be made only on the basis of minimum flows rather than maximum or average flows.
3. Relatively clean upstream flows may not be diverted to an extent that will result in the aggravation of pollution problems in areas downstream from a water diversion point.
4. Waters of a stream may not be diverted to a point where an adequate recreational population of desirable aquatic life cannot survive, or so greatly that other important recreational factors are put in jeopardy.
5. Similarly, waters of a natural lake may not be withdrawn to an undesirable point.
6. Where endangering upstream diversions may be foreseen, and would be of such great importance to the economy of the area as not to be denied, then "compensation in kind" shall be provided, by the impoundment by the diverters of flood flows that must be gradually released during periods of water deficiency in natural channels downstream.

In its concluding statement the Committee pointed out that acceptance can be had in many easterly states of the promise that the nonconsumptive use of water for recreational purposes is, and of right should be legally declared, a primary beneficial use, although much educational effort remains to be exerted to that end. It acknowledged that widespread and effective acceptance of this premise cannot come as quickly in the western states where law and custom have so firmly fixed a different situation, but said that every effort must be made to assure that multiple safeguards affecting recreational use of water, are written into new state water laws in the Mid-West, East and South.

Model State Water Resources Legislation.—A "Model Conservation of Water Resources Act" was considered at the annual meeting of the National Conference of Commissioners on Uniform State Laws on July 8-13, 1957, in New York held in connection with the American Bar Association Convention.

The tentative draft of this suggested State legislation was prepared at the Legislative Research Center, University of Michigan Law School. It provides for the establishment of a State water resources commission with the responsibility for the control of all aspects of water resources including the equitable distribution of available ground and surface waters among various beneficial uses and water quality management.

This proposed legislation departs from existing legislative patterns where the State Health Department is the State water pollution control agency or acts as the administrative arm of an independent water pollution control board, and places full responsibility for water pollution control upon the State water resources commission. Though many questions were raised concerning the statutory and administrative method of allocating water rights, no arguments were posed regarding the water pollution aspects of the proposed Act.

The National Conference of Commissioners on Uniform State Laws laid the Act over to its meeting next year for further consideration.

Sewage Stabilization Ponds in the Northwest.—With steadily increasing sewage treatment works financing and construction costs, greater attention is being given to the use of the relatively inexpensive sewage stabilization ponds in lieu of conventional sewage treatment works where circumstances favor this treatment process. Professor Gilbert H. Dunstan of Washington State College, an Assistant News Editor of this Journal, has prepared the following report on the use of sewage stabilization ponds in the Pacific Northwest:

The widespread use of sewage stabilization or oxidation ponds in the Dakotas and elsewhere in the midwest has encouraged the consideration of this type of sewage disposal in other areas. As a result, five primary and two secondary ponds are known to be in use in the State of Washington, and several others are planned or under construction. Montana also has a number of ponds in use and Idaho is interested.

In Canada it is reported that 70 lagoons are in use in Alberta, but it is not known whether any have been placed in operation in British Columbia. Others have been completed in Manitoba and Saskatchewan.

The original design standard adopted in the Dakotas which called for a surface area of one acre per 100 persons, appears to have been generally followed in other regions on early designs. However, in some states and provinces this standard is now considered to be too conservative. For instance, Manitoba presently considers five acres sufficient for 1000 persons, while Saskatchewan is using a design limit of 50 pounds of B.O.D. per acre per day, roughly equivalent to one acre per 300 persons. An examination of data relative to ponds in Alberta indicates some loadings in excess of this. No objectionable odor conditions are known to have been experienced with these ponds, except possibly early in the spring, shortly after the ice melts.

On the other hand, in Montana, the recommendation is that ponds be designed for 15-20 pounds of B.O.D. per acre per day. It is stated that odor has developed in ponds loaded to 35 pounds, except during the summer when algae are very prevalent.

At Warden, Washington, stabilization ponds have been in operation for about two years. They presently serve a population of just under 1000, and provide for a design population of 1800. The total pond area is 5 acres and the pond depth is 3 feet. This area is divided into three ponds, with only one in use during the first year. During the present year the first pond overflowed into the second, and toward the end of the summer there was some flow into the third. Since potato washing wastes contribute a considerable silt load to the sewage, there probably has been appreciable sealing of the bottom in the first pond. A few spot checks have indicated highly variable B.O.D. reductions.

Cle Elum, Washington, has constructed two stabilization ponds with a total area of 2.3 acres and a depth of 5 feet. These serve a present population of about 1900. However, the sewage is weak, due to considerable infiltration, and a portion of the flow continuously by-passes the ponds. Results are considered equal to that of a primary plant. Enlargement is needed, but is awaiting action of the highway department relative to new major highway construction near the existing ponds.

At Tieton, Washington, two stabilization ponds have been constructed for a design population of 1000 persons and presently serve a population of 650.

The pond depth varies from 3-7 feet, with a total surface area of 4.82 acres. To date, less than a half acre in one corner has been diked off.

A stabilization pond has been placed in operation at Long Beach, Washington, on the Pacific Coast, where the rainfall is higher, but no information is available relative to design or operational characteristics.

Secondary stabilization ponds are used at Ephrata and Quincy, Washington. These operate somewhat erratically, since the primary effluent is also used for irrigation. No operational or design data are available.

A 5-acre stabilization pond at Waterville, Washington, serves about 1000 persons and generally produces an effluent B.O.D. of less than 10 ppm.

All Washington ponds observed have inlets near one end or one corner, rather than at the center. So far as is known, no test results are available to clearly indicate whether center inlets are better than those near one side. The limited testing done this past summer at several of the Washington ponds indicates rather variable results. The reasons for this cannot be determined from the limited data obtained, but is believed to be due to rather large changes in influent sewage.

It seems clear that stabilization ponds will be increasingly used in the Northwest, but additional information is needed to clearly define the desirable design loadings.

Lagooning Textile Wastes.—The Bradford Dyeing Association, one of the largest textile finishing plants in the Nation, formerly discharged over seven million gallons of wastes daily into the Pawcatuck River above Westerly, Rhode Island. The Pawcatuck River is an interstate waterway forming the boundary between Rhode Island and Connecticut, and was the first river classified by the New England Interstate Water Pollution Control Commission in 1952. At that time the officials of the Bradford plant promptly cooperated with the Rhode Island Department of Health by engaging the University of Rhode Island to study the problem and to recommend treatment methods which would meet the classification.

A system of lagoons for treating the wastes by the natural process of oxidation was subsequently installed by Bradford and placed in operation early in the spring of 1957 after extensive cooperative studies with the University of Rhode Island. Lagooning is not a new principle in the treatment of sewage and industrial wastes, but this marks its first application in the textile waste field. Textile mills similarly located in New England have shown an interest in Bradford's possible solution to its waste treatment problem, and studies are being conducted in cooperation with the Bradford Dyeing Association to evaluate the effectiveness of the lagoon method of treatment.

Professor Henry Campbell, Head, Department of Civil Engineering at the University of Rhode Island, has provided the Journal with some preliminary information relative to these studies which may be of interest to readers concerned with the treatment of industrial wastes.

He reports that all of the wastes from the mill flow in a canal, 1800 feet long, to the first lagoon, which has a surface area of 5 acres and a depth of 3 feet. Another canal conveys the effluent from the first lagoon to a second lagoon, which is a natural ox-bow having a surface area of 10 acres and a depth of 6 feet. The effluent from the second lagoon discharges to the river through a narrow opening.

During August, September, and October, 1957, the total quantity of wastes discharged from the mill flowed through the system. A survey of the situation

revealed that good mixing was being accomplished in the lagoons, and that short circuiting of fresh waste waters would not be a problem. The average daily flow of waste liquors was 7 mgd.

Samples were collected at the beginning of the system, and at the effluent ends of the first and second lagoons. Samples taken at the first two stations were composite 24-hour samples, but the sample taken at the effluent end of the second lagoon was only a catch sample, which was collected at the end of a definite interval of time. The remote location of this point made continuous sampling impractical.

During the past summer no adjustment of the pH of the wastes was made because the plant officials wished to observe how effective the system could be in treating the highly alkaline wastes. It was found that the pH changed from 11.2 to 10.4, the removal of B.O.D. varied from 5 to 25 percent, and the alkalinity was lowered roughly 20 percent in the passage of the wastes through the lagoons. The plant wastes contain 100-120 ppm. of B.O.D., 400 ppm. of phenolphthalein alkalinity and 650 ppm. of methyl orange alkalinity.

As these studies are just getting underway, there is little data on which to report. The plant personnel are revising plant processes so as to lower the pH of the plant wastes, to 8.5-9.0. This is expected to make quite a difference in the bacterial action in the lagoons and should result in better removals. Plans are underway, also, to continue the study during the next summer.

Seminar - Oxygen Relationships in Streams.—On October 3 - November 1, 1957, the Public Health Service's Robert A. Taft Sanitary Engineering Center in Cincinnati sponsored a seminar on the dissolved oxygen relationships in streams which brought together interested workers for a free exchange of the most recent available information, to determine areas in which further research is needed, and to stimulate research activity. Leading consulting sanitary engineers, sanitary engineering educators, and State water pollution control agency administrators from the United States and England participated in the seminar along with members of the Center staff.

Construction Grants under P.L. 660, Federal Water Pollution Control Act.—As of September 30, 1957, grants of $50.8 million had been offered to 609 municipalities in 48 states, 2 Territories, and the District of Columbia. These projects involve estimated construction costs of more than $251 million.

Applications from 310 other communities for grants totaling $28.4 million in support of construction estimated at $138 million are being processed in the Public Health Service Regional Offices. An additional 350 applications requesting $37.3 million in grants for nearly $400 million of construction have been received by State water pollution control agencies.

International Joint Commission.—Members of the International Joint Commission visited the Donner-Hanna Coke Corporation plant in Buffalo to inspect the new $450,000 phenol recovery system, installed to abate pollution of boundary waters. The installation has reduced phenol in the waste by about 98 percent.

A report submitted to the International Joint Commission by the International St. Croix River Engineering Board contains recommendations for improvement of the quality of the waters of the river through abatement of sewage and industrial waste pollution. Objectives are to permit restoration of salmon runs, and to improve the waters for domestic water supply,

shellfish propagation, and recreational purposes. The St. Croix River forms part of the boundary between the Province of New Brunswick and the State of Maine.

The Advisory Boards on Control of Pollution of Boundary Waters presented a report to the Commission outlining progress toward attaining established objectives for boundary water quality. While substantial advances were noted, certain municipalities and industries were cited as not having made progress since the last report. It was pointed out that financial aid provisions in Ontario's new legislation have assisted in securing action on municipal sewage disposal problems in Canada.

Interstate Water Pollutional Control Conference Called.—The Surgeon General of the Public Health Service has called a conference for March 4, 1958, on interstate pollution of the Mississippi River (St. Louis Metropolitan Area) under enforcement provisions of P.L. 660. Conferees will include representatives of the State water pollution control agencies of Missouri and Illinois and of the Bi-State Development Agency.

* * *

Whatever principles you put before you, hold fast to them as laws which it will be impious to transgress. But pay no heed to what any one says of you; for this is something beyond your own control.

Epictetus

* * *

SOLID WASTE DISPOSAL

Round Table Discussion of Incinerator Design and Operation.—On June 5, 1957, the Sanitary Engineering Division of the New York Metropolitan Section, A.S.C.E., held a round table on the general subject of incinerator design and operation. Mr. William S. Foster, Editor, American City Magazine, served as moderator and the panel consisted of:

1. Vigo Westergaard, New York City Department of Public Works
2. Norman Wagner, Superintendent of Refuse Disposal, Stamford, Connecticut
3. Abraham Michaels, City of Philadelphia Refuse Disposal Department
4. Morris Klegerman, consulting engineer, New York City
5. Leo P. Flood, New York City Department of Air Pollution Control.

Mr. Clifford Gold, of Bogert and Childs, has prepared a summary of the discussions which he has made available for publication in the Journal. It is reproduced as follows:

Site.—Incinerators should be centrally located for collection economy as collection represents 75-80 percent of total disposal costs.

There is a danger of law suits in residential areas. The Pennsylvania Supreme Court ruled that a municipality can locate an incinerator anywhere provided no nuisance develops.

It is best to locate incinerators on city-owned property.

There are some economic advantages to side-hill locations.

Zoning may have some effect on site selection.

Traffic of trucks may be important and space should be adequate for maneuvering of trucks and some parking of trucks. About 105 to 125 square feet of area is required per ton of truck capacity.

The incinerator structure should be oriented with door openings away from the winter wind.

Material Collected.—The weight of refuse has decreased over the years from 500 to 600 pounds per cubic yard to about 250 pounds per cubic yard.

The heat value of raw garbage in New York City is approximately 5000 to 6000 BTU per pound.

In Philadelphia, separate collections are made, with combustible rubbish going to incinerators, non-cumbustible rubbish to landfill and garbage to farmers or incinerators. The composition of Philadelphia refuse is as follows:

	Paper	Garbage	Non-Combust.	Misc. Combust.
Combustible rubbish	54%	5%	34%	7%
Conglomerate waste	30%	19%	47%	4%

The quantity of refuse collected per capita in Stamford, Conn., and New York City is as follows:

Stamford, Conn.	4 lbs./cap/day including non-combustibles
New York City	4 to 4.5 lbs./cap/day (of which 3.25 to 3.5 lbs. goes to incinerator).

Storage.—A floor dump plant provides for only about 3 hours storage on the floor.

Bin storage may be unsanitary if material is allowed to remain at bottom of bin.

New York City formerly designed for 16 hour storage, but now plans on 24 hours. From 150 to 180 percent of the average daily volume is collected on Monday, requiring excess storage.

The average bin capacity provides for 4 cubic yards per ton of incinerator capacity (range is from 2.2 to 7.3 cubic yards). One member of the group felt that 4 cubic yards per ton should be the minimum allowance.

The width of storage bins varies from 24 to 30 feet. Over 25 feet of width from the tip-in end overloads this end, thereby wasting capacity.

It is advisable to slope the charging end of the bin to provide adequate truck clearance.

Dust in bins can be a problem. Ports, under vacuum, in the side of the bin can remove the dust. Sprays should be provided around the bin walls to keep down dust and, more important, to extinguish fires.

Fire fighting equipment is needed around storage bins.

Drains are desirable underneath the bin to drain water from the garbage and to remove water used in fires.

Plant Design.—The usual design period is twenty years.

Incinerators are designed on the basis of maximum week of production.

Types of Plants.—A floor-dump plant has the disadvantage of either being overloaded or underloaded, since it has little storage.

A daily loading of 100 tons is the dividing line between a floor-dump and crane-and-bin type plants.

The operation of a floor-dump plant is dangerous and unsanitary.

It is harder to expand the capacity of a floor-dump plant.

Furnace and Grates.—The cost of the furnace represents about one-third of the total structure cost.

Factors in furnace selection include:

1. Degree of combustion required (sometimes, partially burned residue is satisfactory).
2. Allowable air pollution.
3. Capacity required.
4. Type of material.

There is little difference in capital cost between rectangular and cylindrical furnaces.

The New York City standard furnace has a capacity of 250 tons per day.

The furnace volume required is roughly 25 cubic feet per pound of refuse - of which 10 cubic feet are in the furnace and 15 cubic feet in the combustion chamber (for material having a 50 percent moisture content and 25 percent ash).

Traveling grates are used in New York City.

Grate area requirements are:

Rough average - 65 pounds/sq. ft./hour.

If partially mechanically stoked - 70 to 80 pounds/sq. ft./hour

The New York City Flushing plant provides for 60 pounds/sq. ft./hour

In Philadelphia a 100 ton capacity plant provides 92 pounds/sq. ft./hour, and a 150 capacity plant 84.5 pounds/sq. ft./hour.

Average figures over the last 2 to 3 years give 57 to 98 pounds/sq. ft./hour.

The Stamford, Conn., plant provides 50 to 55 pounds/sq. ft./hour.

Furnaces are designed on the basis of the highest BTU content of material received - about 5000 BTU/lb.

Gas velocities should be kept below 500 feet/minute.

The operation of the Flynn ad Emerich type of mechanical stoker has been found to be very satisfactory.

The heat released in the furnace will approximate 200,000 to 350,000 BTU/sq. ft./hour.

To minimize air pollution, 25 to 30 percent of the air should be under the fire, and the remainder over the fire. About 100 to 150 percent of excess air should be used.

In Philadelphia and Stamford forced draft is seldom used, since natural draft is adequate and forced draft produces excessive temperatures.

Ash and Residue.—In Philadelphia the fly-ash equipment runs 12 to 13 percent of the structure cost. Water is used to trap fly-ash.

In Stamford sloping-side hoppers dump into a truck or container. Their new 200 ton incinerator will have a Dempster-Dumpster on tracks for collecting residue under a rectangular hopper with only an 8-hour removal of ashes.

In New York City the residue drops into a hopper having a water seal. A

scraper-conveyor removes the residue.

Mr. Klegerman recommended a conical hopper with spray nozzles. The sprayed liquid can be sewage treatment plant effluent, if available.

The quantity of residue to be expected ranges from 5 to 20 percent of the weight of the material received, the higher figure being more common. In Philadelphia and Stamford 3/4 cubic yards of residue (uncompacted) are obtained per ton of incoming material.

The pH of residue water used for quenching in Stamford is greater than 10, and in New York City varies from 5 to 11.

Air pollution requirements in New York City provide for a maximum fly ash of 0.85 pounds per thousand pounds of gas (based on 12 percent CO_2). Here, the fly ash is tested in the chimney by a traverse across the chimney. In Philadelphia, this is done 10 diameters up the chimney.

Costs.—Capital plus operating costs run $3 to $4 per ton of refuse destroyed, of which 60 percent to 70 percent are amortized capital costs.

Operating costs in New York City are $1.75 to $2.00 per ton of material processed, and in Stamford $2.75 per ton.

Average capital costs as given by Mr. Klegerman are:

Generally: $3000 to $4000/ton of installed capacity.
For 1000 ton plant - $4485/ton
800 " " - $2800/ton
720 " " - $3000/ton
500 " " - $4000/ton
400 " " - $1800/ton (1946 cost).

The structure cost is 50 percent of the capital cost.

In New York City the capital cost runs $5000 to $6000/ton.

Collection costs in Stamford (where collection will be made at any point on the property) is $15/ton.

Miscellaneous.—In Stamford, plastics are becoming more of a problem than tin cans ever were. Some are highly combustible, burning in the bins, and some melt.

Only 250 cities in the U. S. have incinerators.

Waste heat is used in Stamford for the hot water used in heating - which requires 800,000 BTU/hour. It is also used for drying sludge at the sewage treatment plant.

In New York City at a 1000 ton plant, it was considered feasible to produce 150,000 pounds of steam per hour; but it was found cheaper to buy power than to generate it.

* * *

Intelligence becomes ours in the degree in which we use it and accept responsibility for consequences. It is not ours originally or by production.

John Dewey

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AIR POLLUTION CONTROL

Public Dump Burning Prohibited in San Francisco Bay Area.—The six counties and over sixty cities in the San Francisco Bay Area were given until October 1, 1957, to cease all burning on public dumps by order of the San Francisco Bay Area Air Pollution Control District. This is one of the first steps that has been taken by the newly-formed District in combatting the "smog" problem, and the majority of the municipalities involved were prepared to comply with the order.

Florida Air Pollution Control Commission Appointed.—Governor LeRoy Collins recently appointed a nine-member Florida Air Pollution Control Commission. The Commission was established by the 1957 Legislature to assist in carrying out the provisions of the Florida Air Pollution Control Act. The Florida State Board of Health is charged with the control of air pollution in accordance with regulations promulgated by the Commission. The Commission is composed of a representative from the State Board of Health, the Department of Agriculture, the Development Commission, the Industrial Commission, and five other non-governmental representatives. One of these must be a professional engineer with experience in sanitary engineering, two will be representatives from industry, and the remaining two discreet citizens representing the general public.

Dr. E. R. Hendrickson, Associate Research Professor in the University of Florida's College of Engineering, has been appointed to the Commission. For the past five years, Dr. Hendrickson has been directing research and a graduate program in various phases of air pollution. He is a member of the Sanitary Engineering Division's Committee on Atmospheric Pollution and co-chairman of the Air Pollution Subcommittee of the S.E.D. Research Committee.

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